Virtualization with AMD and Citrix: Get More from your Computing Resources

IT organizations are constantly seeking ways to improve server utilization, reduce costs, increase security, improve reliability and accelerate response to business imperatives. Virtualization is recognized as one of the key enablers of these objectives, and can bring immediate return on IT investments. Together, Citrix and AMD provide efficient, highly scalable optimized application, client and server solutions for virtualization, particularly for demanding workloads like virtualizing Citrix XenApp™.

Why Virtualization with AMD and Citrix?
Virtualization is becoming a standard method for creating flexible, dynamic data centers that can rapidly respond to changing business needs while managing costs. But effective virtualization needs more than just a good core architecture—it needs a great system design that enables efficiency and scalability that delivers:

- Low latency / high bandwidth
- Memory interconnect
- I/O interconnect
- Core interconnect
- Efficient cache architecture
- Optimized multi-core execution units
- Software optimization

Together, Citrix and AMD provide efficient and optimized application, client and server performance for virtualization, particularly for demanding workloads like virtualizing Citrix XenApp with Citrix XenServer™. Multi-Core AMD Opteron™ processors with AMD Virtualization™ (AMD-V™) technology deliver superior scalability and performance for virtualized Citrix XenApp on XenServer to meet the needs of today’s adaptive IT organizations.

As members of Xen.org and the Xen Desktop Initiative, AMD and Citrix work to ensure that Xen can utilize the latest AMD processor and chipset enhancements to help increase virtualization performance, reliability and security.

Virtualization is a technology that can bring immediate benefit to businesses of any size in terms of helping save energy costs and achieve more flexible resource management. By allowing multiple operating systems, applications and/or user sessions to run simultaneously on a single computing system, virtualization can help IT managers lower total cost of ownership and maximize the value and capabilities of a company’s IT investment by:

- Helping reduce power and cooling costs
- Limiting data center space and overhead expenses
- Enabling maximum utilization of current software investments
- Streamlining deployments and upgrades
- Delivering superior performance, manageability and data security
- Ultimately creating a simpler infrastructure of server and client systems
Superior Efficiency, a More Flexible and Resilient Infrastructure

Traditional data centers use multiple servers to host different kinds of workloads. Virtualizing XenApp servers with XenServer often makes it possible to consolidate workloads onto fewer physical servers. This can help companies achieve better hardware utilization, more flexibility for running workloads and lower power and facilities costs.

Virtualizing Citrix XenApp with Citrix XenServer can help IT departments achieve:

- Reduced server/data center footprint with improved fail-over and redundancy
- Zero-downtime hardware maintenance
- Rapid server, application and capacity provisioning
- Consolidate under-utilized XenApp servers and application silos to maximize IT resources and further green IT initiatives
- Provision and manage XenApp servers across both physical and virtual infrastructure for simplicity, flexibility, and business continuity
- Help ensure day-to-day application availability and augment disaster recovery capabilities

Why AMD Virtualization™ Technology and AMD Opteron™ Processors

AMD engineers helped to pioneer, develop and popularize hardware-base virtualization technologies that can help today's businesses run more efficiently. AMD is a leading developer of features for x86-based computers that enable fast and efficient virtualization of XenApp™ such as energy efficient multi-core processors, advanced memory handling capabilities and hardware-based virtualization technologies. No other processor vendor can match AMD's capabilities for x86 virtualization:

- Multi-Core AMD Opteron™ processors deliver functionality that can help reduce complexity, increase stability and improve performance when virtualizing Citrix XenApp with Citrix XenServer. AMD-V technology with Rapid Virtualization Indexing (RVI) provides enhanced application performance using hardware-based virtual memory management. Tagged TLB delivers fast and efficient switching between virtual machines, and AMD-V Extended Migration helps virtualization software to enable live migration between virtual machines across all generations of AMD Opteron processors.

AMD-V Technology is a set of processor extensions designed to enable AMD processor-based servers and clients to run multiple operating systems and applications on a single machine, and contribute to improved efficiency of virtualization software. AMD-V technology enables better utilization of resources, which helps make client systems, servers and data centers more effective.

Optimal virtualizations with Multi-Core AMD Opteron™ processors also take advantage of AMD features such as:

- **AMD Direct Connect Architecture**, which offers scalability that seamlessly handles heavy workloads with superior resource utilization.
- **AMD Balanced Smart Cache**, helping to improve efficiency for multi-threaded virtualization environments.
- **AMD-V Extended Migration**, a hardware feature that helps virtualization software achieve live migration of VMs across the AMD Opteron™ processor family.
- **AMD-V I/O Virtualization**, planned for future introduction, which is expected to offer enhanced I/O by direct device assignment and improved security through hardware isolation of VMs I/O.

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